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Synopses

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Colgate ANZSPD Research Award Recipients

Research Award Prizewinner:

The D3 Group – bridging clinics, labs and people

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Background: Developmental dental defects (DDD=D3) of enamel are highly prevalent worldwide and their treatment can be clinically challenging. Robust responses to the D3 challenge require amalgamation of diverse interests and talents to develop broad-based initiatives for improving diagnosis, prevention and treatment. Seeking such holistic solutions, The D3 Group (D3G) is a world-first translational research initiative comprising clinicians, scientists, educators, students, professional societies, industry and D3-affected families (www.thed3group.org). This presentation exemplifies how a D3G team of clinicians and scientists is exposing the molecular details of Molar Hypomineralisation (MH). It is hypothesised that better understanding of the variable hardness of MH-opacities may open new avenues for improved diagnosis and treatment.

Aim: To seek a molecular explanation for variable softness within demarcated enamel opacities.

Design: Using MH-affected adult-first-molars sourced from D3G practitioners, demarcated opacities (intact surface; D3G criteria) were sub-sampled (clinical hardness, lesion topography) and subjected to biochemical analysis (protein profiling by SDS-PAGE and immunobiology).

Results: Immunoblots revealed a positive correlation between enamel softness/chalkiness and abundance of albumin. Albumin concentrations typically varied 10-fold within individual lesions (soft centre vs hard border), suggesting that clinical properties might be dictated largely by the content of this extrinsic protein.

Conclusion: These findings implicate albumin in the biophysical properties and pathogenesis of MH enamel. Correlating albumin abundance with enamel chalkiness might have clinical utility (e.g. predicting caries risk, location lesion borders before placing restoration). The D3G translational approach appears to be a useful model for improving healthcare of D3-affected children.

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by Sue Cartwright,
BDS, Dip Clin Dent, M Ed

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Assessment and validation of a diagnostic scale, the prevalence and investigation of risk factors of oral mucositis in paediatric oncology patients – A prospective study

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Background: Childhood cancer affects 1 in 500 children and is the 2nd most common cause of death of Australian children. Oral mucositis is a frequent and severe complication of chemotherapy in children with cancer, with an incidence of 52-80%. Oral mucositis can result in pain, infection, depression, prolonged admission, treatment delays, increase in patient morbidity and increased overall costs.

Objectives: This prospective study was designed to record the prevalence and severity of oral mucositis among inpatients and explore the relationship of risks factors and the development of oral mucositis.

Design/Sample and Methods: During an 18-month period, 117 children aged 3 months to 17 years were receiving chemotherapy treatment for haematological malignancies or solid tumours at the Women's and Children's Hospital. A total of 643 clinical inpatient assessments on 73 children who were admitted and had received chemotherapy in the last 14 days were completed. Statistical analysis was completed with SAS computer software.

Results: There were 43 episodes of oral mucositis identified in 31 patients (26.5% of total population and 42.5% of inpatients assessed). WHO assessment identified 32.6% were grade 1, 34.9% were grade 2, 14.0% were grade three and 18.6% were grade 4. Analysis revealed statistically significant association between patient diagnosis and oral mucositis P<0.0001, chemotherapy cycles and oral mucositis p<0.0001, days 8 and 9 of the chemotherapy cycle and oral mucositis p=<0.05 and neutropenia and oral mucositis (P<0.0001). Children had increased length of admission with increasing severity of oral mucositis p=0.05.

Conclusions: The overall reduction in the incidence of oral mucositis was maintained following the introduction of a standardised oral care protocol. However diagnosis, treatment protocol and days since chemotherapy were shown to influence the risk of developing oral mucositis. Further investigation of risk factors for the development of oral mucositis is planned.

Dentine characteristics under hypomineralised enamel

Dr Daniel Cocker, Felicity Crombie, Geoff Adams, David Thomas, David Manton

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Objectives: To assess the mineralisation, hardness and microstructure of the dentine under normal and hypomineralised enamel and determine if the visual or physical characteristics of hypomineralised enamel predicts the physical characteristics of the underlying dentine.

Design, Sample and Methods: A convenience sample of 20 first permanent molars (FPM) with demarcated hypomineralised lesions, two sound FPM and two sound premolars were collected and hypomineralised lesions were classified as white/cream, yellow/brown with or without post-eruptive breakdown. Teeth were scanned using micro-computed tomography (µCT) to calculate mineral densities. Quantified light-induced fluorescence (QLF) images of hypomineralised enamel lesions of 16 teeth were taken and the change in fluorescence compared to the mineral changes from the µCT. Knoop hardness of enamel and dentine was tested in 15 of the teeth and the remaining 8 samples underwent scanning electron microscopy (SEM) examination.

Results: The mineral density gradient of sound dentine is denser at the DEJ and reduces to the pulpal surface; this was reversed under hypomineralised enamel. Fluorescence change did not predict mineral density. Knoop hardness was not statistically different between test lesion groups and control sites although a trend to more variability in the test groups with microhardness being lower in the outer dentine and higher in the inner dentine. No structural differences were observed using SEM; however, bacteria-like structures were observed within the dentinal tubules.

Conclusions: The mineral density and microhardness of dentine under hypomineralised enamel was abnormal with reversed mineral density and hardness compared to sound dentine from superficial to deep readings. Visual characteristics, QLF and the enamel microhardness did not predict the dentine mineral density, change in dentine mineral density or dentine microhardness. The microstructure of dentine was not abnormal using SEM examination.

Effects of combinations of oral antiseptics and fluoride solutions on oral bacteria

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Objectives: The aims of this study were to compare the effects of oral antiseptics and fluoride solutions on the growth of Streptococcus mutans and non-mutans bacteria (Streptococcus sanguinis and Lactobacillus acidophilus).

Methods: The agar diffusion assay was used to examine the antibacterial activity of combinations of oral antiseptics and fluoride solutions. Zones of bacterial inhibition were measured using a micrometer gauge.

Results: The mouth rinses containing 2% chlorhexidine gluconate, 0.05% cetylpyridinium chloride and 0.05% sodium fluoride produced antibacterial effects against S. mutans, S. sanguinis and L. acidophilus. Of the pure compounds, 0.01% chlorhexidine produced the greatest zone of growth inhibition against S. mutans; while, pure solutions of sodium fluoride or sodium monofluorophosphate, at concentrations up to 10%, had no antibacterial effects.

The addition of 0.1% sodium fluoride to 0.01% cetyl pyridinium chloride interfered with the antibacterial effects of pure 0.01% cetyl pyridinium chloride against S. mutans and S. sanguinis (p<0.001). The combination of 0.1% sodium fluoride

with 10% povidone iodine produced synergistic antibacterial effects against S. mutans and S. sanguinis compared to either compound used alone ($p<0.001$). The combination of 10% povidone iodine with 0.5% sodium hypochlorite interfered with the antibacterial effects of the pure compounds against S. mutans and S. sanguinis and resulted in no bacterial inhibition. This combination, however, produced an additive antibacterial effect against L. acidophilus compared to pure 0.5% sodium hypochlorite and 10% povidone iodine used alone ($p = 0.01$ and $p = 0.001$, respectively).

Conclusion: Mouth rinses containing chlorhexidine, sodium fluoride and cetyl pyridinium chloride have growth inhibitory effects against Streptococcus mutans, Streptococcus sanguinis and Lactobacillus acidophilus. The combinations of povidone iodine with sodium hypochlorite and povidone iodine with sodium fluoride produced additive and synergistic effects respectively.

A retrospective analysis of oral and maxillofacial pathology at the Women's and Children's Hospital, Adelaide, South Australia over a 16-year period

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Objectives: This study intends to present and evaluate the epidemiological features of oral and maxillofacial histopathology in an Australian paediatric population at a tertiary-teaching paediatric hospital.

Design: This study was a retrospective design, with biopsy records over a 16-year period (January 1998 to December 2013) from the South Australia Pathology (SA Pathology) department, Women's and Children's Hospital (WCH), collected.

Setting: This study occurred at the Women's and Children's Hospital, a tertiary referral paediatric teaching hospital in Adelaide, South Australia.

Sample and Methods: Patients aged 0-18 years old with oral and maxillofacial pathology biopsied at the WCH were included. Age and gender distribution, the common anatomical locations for the occurrence of the pathology and medical and dental specialties involved with oral and maxillofacial pathology were assessed and calculated as percentages of diagnostic categories. The features of dentigerous cysts were further investigated.

Results: 676 lesions involving the oral and maxillofacial region were evaluated. The mean age was 8.71 years (range 0-18 years). Patients with odontogenic cysts and tumours were significantly older than those with connective tissue lesions ($p=0.0004$; $p<0.0001$), dental pathology ($p=0.015$; $p=0.015$) and salivary gland lesions ($p=0.0009$; $p<0.0001$). Diagnosis was not significantly associated with gender ($p=0.123$). 97.37% of cases were benign with connective tissue and salivary gland lesions most frequently biopsied and more frequently biopsied by medical departments. Mucocoeles (19.23%) were most commonly diagnosed, followed by dentigerous cysts (5.62%). Dentigerous cysts were frequently occurred in the posterior mandible region (63.42%) although were frequently associated with maxillary canines (29.27%) and in males (70.73%). Treatment of dentigerous cysts was managed by the Department of Paediatric Dentistry (78.43%) and largely involved enucleation and extraction.

Conclusions: This study provides valuable understanding into the epidemiological features of oral and maxillofacial histopathology in an Australian population, with specific insight to dentigerous cysts.

Presentation and management of facial swellings of odontogenic origin in children

Dr Jason Michael

Objectives: To determine the characteristics, aetiology and management of facial swellings of odontogenic origin in the paediatric population.

Design: Prospective study of children with facial swellings of odontogenic origin.

Setting, Sample and Methods: All children who presented to the Departments of Paediatric Dentistry of the Westmead Centre for Oral Health and the Children's Hospital at Westmead with a facial swelling of odontogenic origin over a 12 month period were identified and included in the study. Treating clinicians completed a standardised data collection sheet to record information relating to patient demographics, medical history, dental history, history of current episode of facial swelling of odontogenic origin, examination findings and management. Data were entered in Microsoft® Excel and statistical analysis carried out using Statistical Analysis Software® version 9.3.

Results: Two hundred and fifty-three children were included in the study, with a mean age of 6.3 years. Sixteen percent of children were admitted for intravenous antibiotics, surgical management and supportive care. For the remaining children not admitted, a range of management approaches were undertaken. These included immediate surgical management with or without oral antibiotics, delayed surgical management following a course of oral antibiotics, or oral antibiotics alone, where the cause of the odontogenic infection had already been removed. For 2% of children, a delayed surgical management approach was unsuccessful and the children were admitted.

Conclusions: Management options for children presenting with facial swellings of odontogenic origin include admission to hospital for intravenous antibiotics and acute surgical management, immediate surgical management with or without a course of oral antibiotics or initial management involving a course of oral antibiotics, with definitive dental treatment being provided after resolution of the acute odontogenic infection.

Distribution and severity of molar incisor hypomineralisation: validation of a severity index

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Background: Molar incisor hypomineralisation (MIH) affects first permanent molars (FPMs) and occasionally permanent incisors (PIs). Sensitivity, post-eruptive breakdown (PEB) and poor restorative prognosis are

common. MIH prevalence indices do not measure severity nor guide clinicians. The Molar Hypomineralisation Severity Index (MHSI) requires clinical validation.

Aims: To describe distribution, clinical characteristics and severity of MIH and compare MHSI of affected teeth/dentitions with treatment delivered independently.

Participants and Methods: A convenience sample (283 MIH affected children) identified by five paediatric dentists were examined for characteristics (defect colour, location, PEB; sensitivity; restorations placed/replaced/atypical); treatment was recorded for 152. The MHSI was applied and treatment associations investigated.

Results: Mean values per child of affected FPMs and PIs were 3.2±1.0; 1.6±1.6 respectively. No predilection for arch/quadrant for FPMs occurred; predilection existed for maxillary central PIs. The number of affected PIs increased with increased number of affected FPMs (p=0.001). FPMs: brown defects were most prevalent (47%), yellow (36%), white (17%). Defects were located on cuspal (74%), occlusal (12%), smooth surfaces (13%). PEB occurred most with brown cuspal defects (67%). Sensitivity was reported for 22%, especially to temperature (93%). PIs: white defects were common (65%), particularly smooth surfaces (72%). Sensitivity and/or previous restorations were rare. Treatment: 49% of 152 children were treated under general anaesthesia. Affected FPMs received more treatment than unaffected, averaging 1.5 interventions/FPM vs 1.1 (p=0.0001). As MHSI tooth/dentition scores increased, treatment interventions per FPM/child increased. Low scores were associated with prevention; high scores with restorations/extractions.

Conclusion: MIH defects ranged from mild to severe. Severe defects: yellow-brown, found on cuspal tips/inclines of FPMs and maxillary central PIs. Mild defects: white, often found on smooth surfaces. Mild defects with low MHSI scores were associated with prevention and with fewer adhesive restorations/extractions than severe defects with higher scores. Characteristics contributing to MHSI were predictive of treatment types.

(Support: ANZSPD Victorian Branch; eviDent Foundation)

Hypomineralised second primary molars: prevalence, defect characteristics and relationship with dental caries in Melbourne preschool children

Dr Marilyn Owen

Objectives: To determine in Melbourne preschool children: (1) the prevalence of hypomineralised second primary molars (HSPM); (2) the relationship between severity, extent and number of affected HSPM; (3) the prevalence of early childhood caries (ECC); (4) any relationship between ECC and HSPM.

Setting: Children who attended randomly selected early childhood education and care service centres (ECECSCs) in inner Melbourne were invited to participate in the study.

Sample and Methods: In total 623 three to five year old children who attended 30 randomly selected ECECSCs participated. The presence of HSPM was recorded using the EAPD Criteria for Molar Incisor Hypomineralisation. Dental caries was recorded using International Caries Detection and Assessment System criteria (ICDAS-II).

Results: In total 144 HSPM were observed in 88/623 (14.1%) children. In affected children, a statistically significant relationship existed between the extent of the hypomineralised enamel lesion with increasing number of HSPM. A trend existed between more severe HSPM lesions and increasing number of HSPM. The association between HSPM lesion severity and HSPM lesion extent at the tooth level was statistically significant. The prevalence of dentinal lesions (d4-6mft > 0) was 13.2%, after the inclusion of white spot lesions (d2-6mft > 0) prevalence was 36.4%. Caries affected 30.7% of HSPM. The relationship between the extent of HSPM and the dental caries severity reached statistical significance.

Conclusions: The prevalence of HSPM was 14.1%. The relationship between an increase in HSPM lesion extent and increasing number of HSPM affected per child was a statistically significant. The association between HSPM lesion severity and lesion extent at tooth-level was statistically significant. In this low-caries risk population, children with HSPM did not have greater caries experience than unaffected children.

An investigation into the validity of the quantification of white spot lesions on smooth surfaces of enamel by ICDAS, QLF and digital photography

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University of Melbourne.

Objectives: To compare the ability of Quantitative Light-induced Fluorescence (QLF) and Digital Photography (DP) images to quantify enamel white spot lesions (WSL) on smooth surfaces.

Design, Sample and Methods: After ethical approval, QLF and DP images of teeth 14 to 24 and 34 to 44 with WSL scored using ICDASII were collected from 45 healthy adolescent subjects. The change (Δ) in fluorescence (ΔF) and lesion area values were recorded by a blinded examiner using the Research QLF™ Software. A DP protocol using the CIE L*a*b colour space on Adobe Photoshop CS6 software was developed. Three areas of interest (AOI) were defined: 1) WSL; 2) individual tooth with flash deselected and 3) individual tooth with flash and WSL deselected, and L*a*b values were recorded. QLF and DP L*a*b value calculations were repeated three times. All QLF calculations and mean L*a*b values used to calculate ΔChroma, ΔHue and ΔColour between AOI 1 and 2 and AOI 1 and 3 were plotted against ICDAS II scores. The intra-class correlation (ICC) and limits of agreement (LOA) were calculated for DP and QLF calculations as were the LOA between DP and QLF calculations, sensitivity, specificity and receiver operating characteristic curves.

Results: QLF and DP L*a*b values demonstrated strong reproducibility (ICC>0.9). QLF values demonstrated a linear relationship to ICDAS II scores, however, were affected by confounding factors. DP demonstrated no direct relationship to ICDAS II values. Difficulty differentiating between true WSL and developmental defects of enamel which resembled WSL affected both DP and QLF values. To overcome issues with confounding factors, QLF and DP L*a*b values should be collected in conjunction with visual inspection.

Conclusions: QLF is reproducible for detection and quantification of WSL in conjunction with visual inspection. DP is reproducible for detection of WSL, however cannot be used reliably for quantification of WSL.

An 11 year retrospective audit of the characteristics, presentation and management of severe odontogenic infections requiring admission to the Adelaide Women's and Children's Hospital

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Objectives: The purpose of this retrospective audit was to assess patient characteristics, history and inpatient management of children with odontogenic infections requiring inpatient hospital care and their relationship to length of admission.

Design: Retrospective audit.

Sample and Methods: This retrospective study reviewed children admitted under the Paediatric Dental Department, Women's and Children's Hospital, South Australia for management of facial cellulitis of odontogenic origin over an eleven year period. One paediatric dentistry registrar reviewed all medical files and data were entered in Microsoft Excel. Statistical analysis was carried out using SAS 9.3.

Results: A total of 202 cases were identified. Subjects ranged in age from 1.42-18.0 years, with an average of 7.06 years. 36.14% of subjects were female and 63.86% subjects were male. Almost three quarters of the subjects had sought care from a health care professional prior to their hospital admission, including 58.91% who had sought care at a local dental service. Close to half the subjects had taken antibiotic(s) prior to their admission. Patients were managed with a combination of surgical treatment and antibiotic therapy. 3.96% of subjects were admitted to the intensive care unit post-surgical management and 2.99% remained intubated post-operatively. The average length of admission was 1.58 days, though the range was 0.12-9.37 days. Multivariate analysis shows that temperature at time of surgery, number of spaces involved, antibiotic use, surgical treatment and skill of practitioners all have statistically significant associations with the length of admission.

Conclusion: An extended length of admission was commonly seen in older children with odontogenic infection related to permanent teeth. The majority of these children had been seen by a local dental service prior to admission. It would be of value to investigate whether these cases could have been managed earlier and more appropriately at a local level before significant infections arise.

Caries experience in Victorian children with orofacial clefts

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Objective: To evaluate the caries experience of children born with a cleft of the lip and/or palate in Victoria, Australia.

Design: Retrospective chart review.

Setting: The Royal Children's Hospital (RCH), Melbourne.

Sample: The sample consisted of 701 children from birth to 18 years of age with syndromic and non-syndromic forms of cleft lip, cleft lip and palate and cleft palate only.

Methods: Data were extracted from Titanium software routinely used in RCH and public dental clinics. Information collected included gender, age, region of residence, socio-economic status and caries experience (dmft+DMFT). Children were sub-divided by caries experience as low (dmft+DMFT=0), moderate (dmft+DMFT=1-3) or high (dmft+DMFT=4+) and analysed by cleft type and age.

Results: Just under half (47.2%) of all children had dmft+DMFT=0, this proportion declining significantly with age from 84.8% of the 0-5 year olds to 38.6% of 6-12 year olds and 31.7% of the 13-18 year olds. The difference in caries experience between the age groups was statistically significant ($p<0.001$). Nearly one third (31%) of the 6-12 year olds and 25.3% of the 13+ year olds had a high caries index with mean dmft+DMFT of 6.69±2.46 and 6.94±3.65 respectively. There was no statistically significant difference in caries experience between cleft types.

Conclusion: Whilst nearly half of all children with CL/P had dmft+DMFT=0, a significant proportion had high caries experience. Identifying high caries-risk children at a young age is important in optimizing care outcomes.

Changes in the oral health related quality of life in children following comprehensive oral rehabilitation under general anaesthesia

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Objectives: To assess the changes in the OHRQoL, before and after comprehensive oral rehabilitation under GA, among West Australian children (i) < 6 years using the ECOHIS instrument, and (ii) aged 6-14 years using the COHRQoL instrument.

Design: A pretest / post-test design, with a consecutive clinical sample of parents / caregivers of children treated under GA.

Setting: A paediatric speciality dental clinic in a University teaching hospital in Western Australia.

Sample and Methods: 136 healthy children under 14 years of age, who had comprehensive dental treatment under GA, were recruited over a period of 12 months. The parent or caregiver of the study participants completed the ECOHIS questionnaire (<6 years of age) or COHQoL questionnaire (for children 6-14 years of age) prior to the dental treatment and at the subsequent follow-up appointments of two-weeks and three-month's post-treatment. Data was analyzed using repeated ANOVA with adjustments for multiple comparisons using the Bonferroni tests with the significance level set at 5%.

Results: The overall ECOHIS, CIS, and FIS scores decreased significantly ($p<0.001$) demonstrating large effect sizes. The greatest decreases in the ECHOIS scores were for the domains of child oral symptoms (57.5%) and psychology (38.7%) in the child section and for the domain of parental distress (38.9%) and family function (40%) in the family impact section. For COHQoL, the overall P-CPQ and overall FIS scores decreased significantly for all items ($p<0.001$), demonstrating large effect sizes. The greatest decreases in the P-CPQ scores were for the domains of oral symptoms (77.7%), functional limitations (74.3%), and the family impact section (80.1%).

Conclusions: The OHRQoL of west Australian children in both age groups (<6 years, and 6-14 years) was significantly improved after comprehensive oral rehabilitation under GA.

Effects of zoledronic acid on human gingival fibroblasts, human alveolar osteoblasts and primary human osteoclasts

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Background: Bisphosphonates are widely used in benign and malignant bone diseases, such as osteoporosis, Paget's disease and metastatic cancers in adults, and osteogenesis imperfecta and hypercalcaemic conditions in children. Bisphosphonate related osteonecrosis of the jaw (BRONJ) is a well recognised side effect of bisphosphonate therapy. The mechanisms underlying BRONJ pathogenesis are poorly understood. Evidence from previous studies indicates that anti-angiogenic effects and the inhibition of the mevalonate pathway (MVP) may play a role in BRONJ pathogenesis.

Objectives: To determine the effects of zoledronic acid (ZA) and replenishment of the MVP by geranylgeraniol (GGOH) on human gingival fibroblasts (HGFs), human alveolar osteoblasts (HOBs) and primary human osteoclasts (OSTs). Although, this research was aimed to carry out in adults, it serves as a foundation for research in children and similar potential benefits could be derived for children.

Design: Three primary cell lines HGFs, HOBs and OSTs were cultured and phenotyped. Cellular behaviour was examined using viability, migration and apoptosis assay in HGFs and HOBs. Quantitative real time PCR (qRT2-PCR) technology was used to examine the angiogenic gene expression in HGFs, HOBs and OSTs.

Results: ZA caused an initial increase in cell viability and induce apoptosis in HGFs and HOBs. ZA significantly ($p \leq 0.05$, FR $> \pm 2$) regulated four genes in HGFs, 28 genes in HOBs and one gene in OSTs compared with controls. The addition of GGOH restored the expression of some genes in these cell lines.

Conclusions: The negative effects of ZA on three primary cell lines, and their reversal with the addition of GGOH, suggests that the effect of ZA on in these cell lines is mediated via the MVP. The results also suggest a possible therapeutic/preventive strategy for BRONJ may be to target the MVP by reversing the effects of ZA with the addition of GGOH.

New Zealand Dental Association Research Foundation grants, Ministry of Oral Health, Lottery Health Research grant and Maurice & Phyllis Paykel Trust funded this project.

Federal President's Report

Tim Johnston

I love a dental conference, it starts with a few quite hours on a plane reading a book, usually pretty low key with only a few neurons attentive but perfect for a plane ride...

...And the phone off. A dental conference lets you catch up with Colleagues, to see how the world is turning for other people and to learn a new trick or two. An ANZSPD conference is better. The book is no improvement but the company is. An ANZSPD conference means catching up with friends more than colleagues, some you only see once in a blue moon, or at an ANZSPD federal meeting but it is like catching up with true friends. We start where we left off last time as if no time has passed. The very noticeable thing about an ANZSPD meeting is everyone is happy, there are smiles and laughing which is not always obvious at other meetings. And of course we don't look any older. Except there are all these young folk running around now, they weren't there last time I'm sure and so many. And you know, just like the older members (which I unfortunately count my self as one), the young folk have caught the same spirit. There are smiles and laughter and yes, we all learn a new trick or two. It is this sense of friendship and camaraderie that makes ANZSPD almost unique and really special.

The Adelaide meeting in November was no exception, it was spectacular. Congratulations to the South Australian Branch and the local organizing committee chaired by Drs Michael Malandris and Sam Gue. Although they were the faces on the stage, we are very aware of the effort all played and my congratulations and thanks go to all. Congratulations also to the post graduate students who presented their research in the Colgate ANZSPD Research Award. Three years of hard work condensed to a few minutes is a difficult task, to portray the depth of the project completed to the level it deserves. A record field of candidates fascinated the audience through the day, in the end Dr Vidal Antonio Perez Valdes was awarded winner but it was clear all the presenters were victorious. It was clear the real winner is the future of children's dentistry. Congratulations to Vidal and congratulations to all.

A Federal Council meeting at a Biennial Conference is a significant meeting as it involves changes in people. A few very good people left the committee in 2015 and their efforts need recognition. Dr Kareen Mekertichian finished his time as Immediate Past president. Kareen has been a dedicated servant for many years to ANZSPD at the branch and federal level. Kareen is a wise man and always provides considered advice and as New President, I will miss his wisdom and guidance.

Dr Joe Verco also left the Council from his position as South Australian Federal Councilor. Joe has been and remains one of the statesmen of our Society, his advice at the Council table through to a shared moment over a glass of wine has been invaluable and again will be missed. Thank goodness there is always an opportunity to share another glass for wise council.

A very special mention goes to Dr Peter Gregory. Peter has served ANZSPD for many years from branch activity through to a past Federal Presidency. On the sad passing of Alistair Devlin, Council knew that the maintenance of the Society was in its management and the gathering of Alistair's records needed a sure and steady hand. Knowing Peter as his practice partner for 19 years, I knew how diligently he dots his i-s and crosses the t-s. Longish story short, Peter graciously took on the position of Secretary/Manager and as expected, with utmost professionalism ensured the Society's records were correct, to date and transferable to future office bearers. Under Peter's guidance, the position of Secretary/Manager has now been divided in two, ratified at the last AGM to Federal Secretary and Federal Treasurer. My thanks to Drs Carmel Lloyd and Rod Jennings for taking on these new positions with great enthusiasm. Thank you Peter for all you have done, I really can't think of anyone else who could have done what I am sure at times was an emotional job and for your continued guidance.

I promised the Editor that this would be a short report and it looks like its not turning out that way. I will wrap this up and touch base on continued activity in the next report. The ANZSPD Website is well and truly up and running. Its not complete, there has been issues from the developers end that Dr John Winters has with the patience of a Saint taken in his stride and continued to press on and make it work. John understandably needs to pass on his position as webmaster. A website committee has been put together and it is our hope they can continue John's efforts and finalise the website to that John envisaged. Thank you again John for the outstanding effort you have done and I know continue to do due to attend to the never-ending questions you get.

During the time I have been a member of Federal Council, I have noted an increasing demand on ANZSPD as a source of expert advice and council to Dental, Allied and Government bodies. A re-read of Dr John Sheahan's last President's report in October 2015 outlines this activity and made it quite clear the size of the shoes the next President needs to fill. Alongside our sister Academy, John's professionalism and diplomacy through his Presidency has given ANZSPD a significant voice in the promotion of children's dentistry and oral health. Advice is now sought from the highest levels of the Australian Dental Association and State and Federal Government. John, the continued and dramatic rise in the importance of ANZSPD in the Australian, New Zealand, Asian and International dental arena is an absolute credit to the time and effort you and your family have provided to this Society. On behalf of our membership, I would like to extend our gratitude for the extended Presidency you served and from me, thank goodness you're still around because I have a few questions.

Tim Johnston
Federal President
ANZSPD Inc.

Australian and New Zealand Society of Paediatric Dentistry (Inc.)

Convenors 18th Biennial ANZSPD Congress

Convenor's report

We did it! What a great 4 days we had from November 12-15, 2015. I want to thank the entire Local Organising Committee who stuck together for well over 2 years to help create such a successful conference. Thank you to so many delegates both local and further afield who took the trouble to speak to us to say how much they enjoyed their time and of course how much their clinical knowledge had been enriched by the feast of extremely impressive presentations that were on offer.

Here are some of the highlights from the 18th Biennial Congress:

Registrations for the two-and-a-half day event were well over 250 for some days. Delegates attended from as far afield as Germany, USA and Peru.

26 separate scientific main presentations (excluding Postgraduate Research Competition presentations). Incredible standard, including 2 plenary and 2 additional lectures from Keynote Speaker Professor Helen Rodd, 4 lectures from Professor David Manton and 3 from Professor Bernadette Drummond. Concurrent sessions held on Friday allowing delegates from all clinical backgrounds to choose between two very strong programmes. Inspirational, themed scientific programme.

The Postgraduate Research Competition on Saturday had an unprecedented 13 successful entrants vying for the prestigious prize.

Colgate as the Principal Sponsor was incredibly supportive throughout the whole process from the organisation right through to the wind up of the congress. 3M committed to sponsoring a postgraduate and recent graduate lunch session in the main exhibition hall on Saturday. In total we had 8 companies exhibiting throughout the congress as well as a number of other organisations providing product or reading material for distribution into satchels or at the exhibition hall.

The promotional campaign included distribution of flyers at AAPD (Seattle), IAPD (Glasgow) and ADA (Brisbane), all Australian state and New Zealand Dental Association newsletters, online presence from our website, social media, regular email blasts from ANZSPD Inc. and personal promotion from members all around Australia and New Zealand to their respective provincial members.

Fantastic support from the Adelaide Convention Centre and Lara and the team at The Meeting People.

Great social programme with the highlight being the fabulous Gala Dinner

Significant profit made to be returned to ANZSPD Inc. as well as our state branch.

Thanks again to my fellow LOC members who worked with me so hard to achieve what we achieved here in Adelaide for the 18th Biennial Congress. A very special mention to Dr John Heahan as Immediate Past President of ANZSPD Inc. for all his support and comprehensive guidance throughout the whole process of hosting the congress. Special thanks also to Dr Peter Gregory, Immediate Past Secretary / Manager of ANZSPD Inc. who also provided us with much needed guidance and support and finally to Associate Professor Sam Gue who as Scientific Chair was able to develop a scientific programme of such quality and broad appeal. I can personally acknowledge this was no easy task!

We hope many of you were able to enjoy extended stays in Adelaide and beyond in South Australia and that these photographs bring back fond memories. I look forward to seeing you all again soon.

Michael Malandris

Scientific Chair report

It is with the greatest honour that I write this post congress scientific report. The 2015 Australian and New Zealand Society of Paediatric Dentistry scientific meeting held in Adelaide, South Australia in November 2015, was an outstanding success and well exceeded all expectations. I would personally like to thank all the invited speakers, who without their commitment and enthusiasm, the meeting would not have been the success it was. Professors Helen Rodd, Bernadette Drummond and David Manton were outstanding in their level of scientific knowledge, which has raised the level and respect of what managing children is all about. There was an enormous amount of new and interesting material that was presented, which without question resulted in an extremely stimulating and thought provoking scientific meeting and left all delegates keen to learn more. The key basis of providing a scientific programme and conference which results in improving our overall ability to manage the children was the primary aim of the organising committee and the various feedback from delegates, this was achieved. The entire programme and all the invited speakers delivered superb presentations in their respective fields and encompasses all that paediatric dentistry has to offer. I would also like to congratulate all the postgraduate students who presented their research. The vast quality of talent the profession has for the future was clearly on exhibit for all to see and the future is very exciting. I would also like to extend a special thank you to all those involved in the conference from the local organising committee and the conference organisers, who allowed for a very professional and well organised meeting. Finally I would like to thank all the delegates who without their involvement the conference would not have been the success it was.

Associate Professor, Sam Gue

Scientific Chair
18th Biennial ANZSPD Congress

Diagnosis and Dental Management of a Patient with Haemophilia A: A Case Report and Review of the Literature

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Introduction

Dental professionals need to be aware of the impact of bleeding disorders. Management of the dental patient, who has a bleeding disorder, requires an understanding of the normal haemostatic system and the patient's specific coagulation defect. In patients with haemophilia, routine dental treatment can lead to significant complications. For some patients, dental treatment is the first sign of their bleeding disorder. As such, it is imperative that dental practitioners are knowledgeable about the pathology, diagnosis, complications and treatment options associated with these conditions.

Case Report

A seven-year old male was referred from the Emergency Department (ED), Women's and Children's Hospital (WCH) for management of prolonged bleeding after a tooth extraction.

The patient was born at full term with an uneventful birth history. There was no history of hospitalisations or family history of bleeding disorders. The patient was not taking any medications nor did he have any allergies. Socially, the patient was the oldest child of four siblings, all of who were fit and healthy. The patient and his family moved as refugees to Australia from Afghanistan in 2010.

The patient had recently received dental treatment through the South Australian School Dental Service. The maxillary first primary molar was extracted by an oral therapist. The patient was reviewed four and eight days later for prolonged bleeding from the extraction site. He was then referred to the WCH ED for emergency management.

On examination, extra-oral tissues were within normal limits. No significant asymmetry was observed. Soft tissues, including tongue, palate and oral mucosa were within normal limits. There was moderate localised gingivitis with associated moderate localised plaque accumulation in quadrant 2. The socket of 64 presented with a two centimetre fresh blood clot and constant slow oozing. There was no evidence of any non-systemic reason for the prolonged bleeding.

The patient was in his mixed primary dentition stage of dental development. Multiple carious lesions were present on primary teeth.

The primary problem of prolonged bleeding from socket of 64 was of primary concern. Haemostasis was achieved with compression of the socket with pressure for five minutes. The patient was discharged with oral tranexamic mouthwash (5ml qid) and tablets (250mg tid) were prescribed for 10 days. Investigations included a full blood count and coagulation screening. The full blood count revealed normal platelet counts of 403 (UNIT). The results of the coagulation screening were within normal limits, except for the factor 8 level which was 27IU/dL (normal 65-165IU/dL). As the level of Factor VIII was 27IU/dL, the patient was diagnosed with mild Haemophilia A.

After discussion with the Department of Haematology and Oncology, dental treatment was postponed until after the patient underwent a trial for treatment with desmopressin. Unfortunately, the patient responded poorly as he was not able to achieve normal results and Factor VIII levels dropped rapidly. As a result, the Haematology Registrar advised that the patient required Factor VIII replacement prior to dental procedures as well as oral tranexamic acid for seven days post-operatively. Mutation screening also revealed two previously undescribed missense mutations in the Factor VIII gene (Xq28). Thus, the patient's inhibitor risk was unknown.

The patient was reviewed for comprehensive examination and treatment planning ***(Figure 1-4)***. Treatment options were discussed with the patient and his parents, particularly as the patient had previously received and was cooperative for dental treatment with local anaesthesia. Treatment requirements for the patient included the placement of stainless steel crowns and fissure sealants as well as extractions. Space maintenance would be achieved with maxillary and mandibular removable splints, which could also be used as fluoride splints. The need for Factor VIII replacement prior to dental treatment was carefully considered because if treatment was to be performed using local anaesthesia, at least four appointments would be required, with pre-operative Factor VIII replacement for inferior alveolar nerve blocks and extractions. If treatment was performed under GA, Factor VIII replacement would still be required, however all of the patient's treatment needs could be completed in the one procedure. Thus, it was decided to perform restorative treatment under GA.

The medical management for AA was further discussed with the Haematology Registrar. Factor VIII replacement (1000 units) was given pre-operatively and oral tranexamic acid (250mg) three times daily for 7 days post-operatively was prescribed. A planned oral intubation was also discussed with the Anaesthetics Consultant because of the risk of bleeding with nasal intubation.

Treatment was performed under GA and included fissure sealants, stainless steel crowns and extractions. Haemostatic sutures and Surgicel® were placed as local haemostatic measures. Impressions were taken for the construction of the removable splints.

An unplanned review was required for the patient four days post-operatively when he presented to the WCH ED. The sockets had started bleeding in the morning after he played with the sutures. The family unsuccessfully tried to stop the bleeding with compression using two boxes of facial tissues. On examination, a continuous ooze of blood was observed from the extraction sites, particularly the upper anterior area. It was revealed that the patient had only been using tranexamic acid mouthwash and had not been taking oral tranexamic acid. After discussion with the Haematology Registrar, the patient was given 1000 units of Factor VIII intravenously and discharged with 1000 units of Kogenate® (recombinant Factor VIII).

Figure 1. Maxillary pre-operative

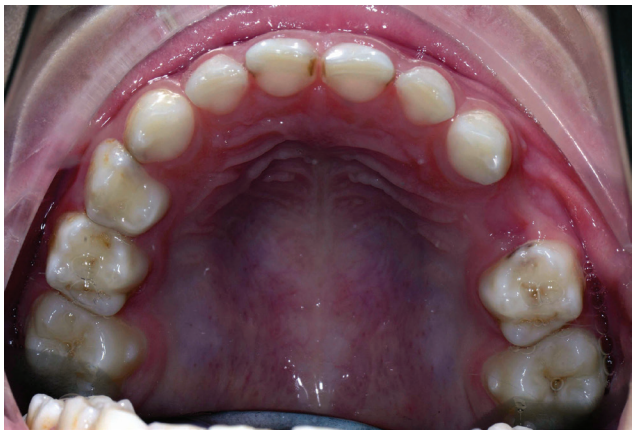


Figure 2. Mandibular pre-operative

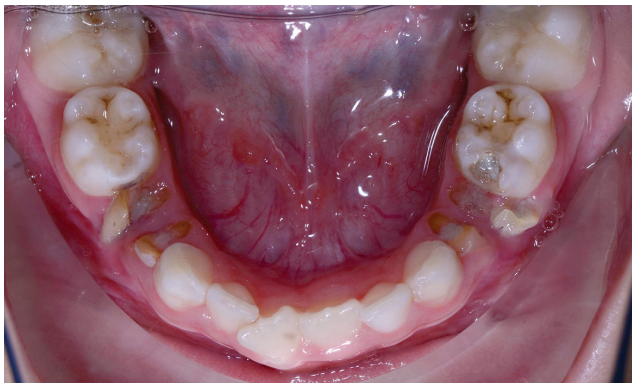


Figure 3. Intraoral pre-operative

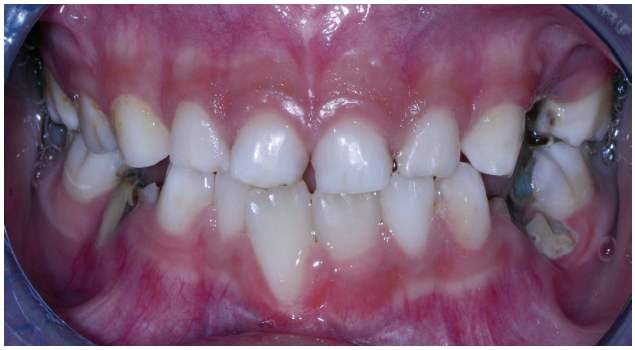


Figure 4. Pre-operative OPG

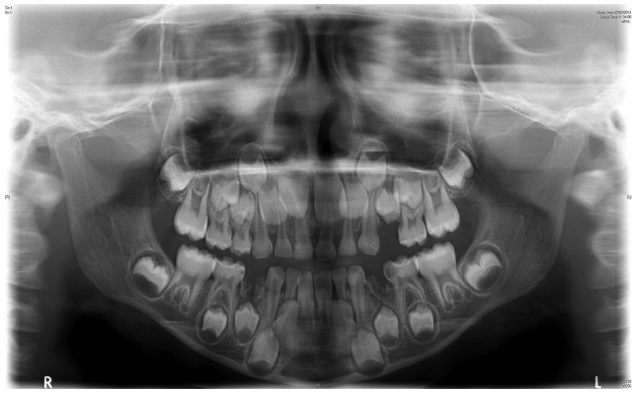


Figure 5. Maxillary post-operative

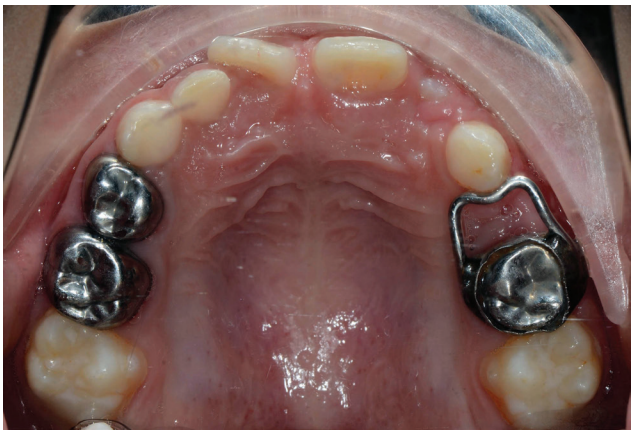


Figure 6. Mandibular post-operative

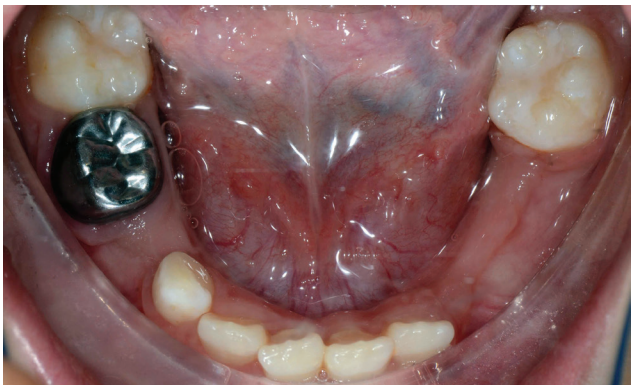


Figure 7. Intraoral post-operative

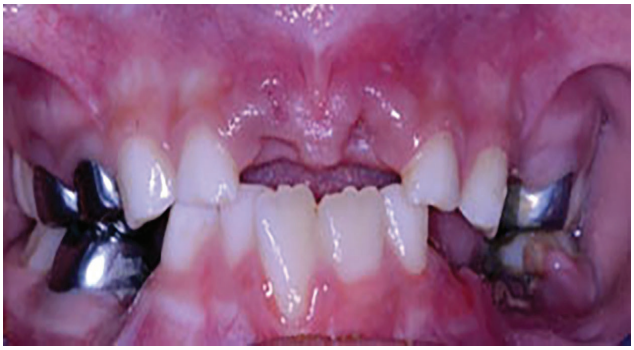
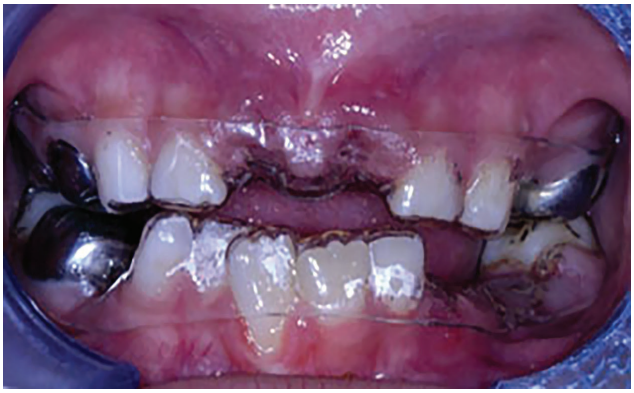


Figure 8. Intraoral post-operative with the removable splints



The patient was further reviewed by the Haematology Registrar the following day. An additional 1000 units of Kogenate® were given and the oral tranexamic acid dose was increased to 250mg four times daily.

The patient attended for a one-week post-operative review in the Department of Paediatric Dentistry. The removable splints were inserted. There were no reports of additional prolonged bleeding episodes and the extraction sites were healing uneventfully ***(Figure 5-8)***.

The patient was then reviewed at regularly in the Department of Paediatric Dentistry, WCH, with oral hygiene and diet counselling performed as well as the application of fluoride varnish. The maxillary removable splint was replaced by a maxillary band and loop space maintainer as the maxillary incisors erupted. He has maintained satisfactory levels of oral hygiene and has maintained caries-free for the last two years.

Discussion

The above case report illustrates the involvement of paediatric dentistry in the diagnosis of haematological disorders and subsequent considerations for dental treatment. Haemophilia is an inherited X-chromosome-linked bleeding disorder. The prevalence of haemophilia A is 1 in 10,000 males (Israels et al., 2006). The disorder accounts for 85% of haemophiliac patients and is caused by decreased levels of factor VIII. The severity of Haemophilia A can be classified into mild (5-40IU/dL), moderate (1-5IU/dL) and severe (<1IU/dL). Thus AD has moderate-severe Haemophilia A, TS has mild-moderate Haemophilia A and AA has moderate Haemophilia A. The clinical presentation of Haemophilia A is characterised by easy bruising, spontaneous muscle and joint haemorrhage and excessive bleeding following trauma and surgical procedures. In males, mutations in the Factor VIII gene manifests as Haemophilia A in males and as the carrier state in females. In carrier females, the levels of Factors VIII and IX vary widely and may be low enough to result in clinical bleeding problems (Israels et al., 2006).

Defects in the Factor VIII gene include over 250 types of deletions and point mutations – the intrachromosomal inversion of intron 22 is present in almost 50% of patients with severe haemophilia A, as is the case for AD (Israels et al., 2006). In mild haemophilia A, desmopressin (DDVAP) can be used to increase factor VIII levels to approximately twice baseline, which may result in adequate haemostasis for minor bleeds or procedures. However, inhibitors (allo-antibodies) to factor replacement therapy can develop as an immune response in up to 20-30% of patients with haemophilia A. Inhibitors are more frequently seen in patients with severe haemophilia, especially in those with large gene deletions. Inherited differences in immune responses can also influence the risk of inhibitor development. The presence of inhibitors complicates treatment, as simple factor replacement is often not effective.

There are several screening tests available to assist with the diagnosis of bleeding disorders including platelet count, bleeding time, prothrombin time (PT) and activated partial thromboplastin time (APTT). Haemophilia A is suspected when there are normal platelet counts and normal bleeding time, PT and APTT. However, the diagnosis of haemophilia must be confirmed by specific laboratory assay. The diagnosis of Haemophilia A in this case was confirmed by laboratory assay after initial emergency dental management was performed.

There are a variety of medications used in the management of Haemophilia A, including Factor VIII concentrates, fresh frozen plasma (FFP), cryoprecipitate, desmopressin, tranexamic acid and epsilon aminocaproic acid (EACA). The World Federation of Haemophilia (WFH) recommends the use of recombinant or viral-inactivated plasma-derived concentrates over the use of cryoprecipitate or fresh frozen plasma for the treatment of haemophilia (Srivastava et al., 2013). However, plasma products like FFP and cryoprecipitate are still commonly used in developing countries, where they may be the only available or affordable treatment option. Factor VIII concentrates are the treatment of choice for patients with Haemophilia A and may be or recombinant or viral-inactivated plasma origin. Desmopressin is also known as 1-deamino-8-D-arginine vasopressin (DDAVP) and is a synthetic analog of vasopressin which raises plasma levels of Factor VIII and von Willebrand factor (Srivastava et al., 2013). DDAVP may be the treatment of choice for patients with mild or moderate haemophilia A, when Factor VIII can be increased to appropriate therapeutic levels. Furthermore, the use of DDAVP avoids the expense and potential risk of using a clotting factor concentrate. The patient's response to DDAVP must be tested prior to therapeutic use as there are significant differences in responses between individuals. Tranexamic acid is anti-fibrinolytic agent that competitively inhibits the activation of plasminogen to plasmin (Srivastava et al., 2013). Tranexamic acid promotes clot stability and is used as adjunctive therapy in Haemophilia. It is effective in controlling bleeding from skin and mucosal surfaces. Tranexamic acid is usually given as an oral tablet three to four times daily. It is also available as an intravenous infusion or a mouthwash. To prevent post-operative bleeding, tranexamic acid is commonly prescribed for 7-10 days following dental extractions. Post-operative for all three patients, the use of tranexamic acid was beneficial in maintaining haemostasis. The efficacy of tranexamic acid is highlighted by the commencement of prolonged bleeding four days observed after dental treatment when the patient did not commence its use until his presentation to the WCH ED. EACA is similar to tranexamic acid however as it has a shorter half-life, is less potent and is more toxic, it is less widely used (Srivastava et al., 2013).

There are currently no standard guidelines on managing paediatric patients with Haemophilia A. Dental treatment protocols for the management of patients with bleeding disorders and coagulopathies varies between countries and even between Australian states and territories. Treatment protocols for adult patients in Australia are largely based on the Stubbs and Lloyd article in 2001 and by recommendations by the Australian Health Minister Advisory Council FVIII and FIX guidelines 2012 (NBA, 2012). In 2009, a consensus statement was developed by leading hospital-based dental professionals in Australia regarding the dental treatment for patients with inherited bleeding disorders (Hewson et al., 2011). The authors found little evidence based data for most dental care for patients with inherited bleeding disorders and as such, some recommendations in the statement are based on clinical experience and professional opinions.

In patients with no bleeding issues, clinically significant bleeding is unusual as a post-operative complication from dental procedures (Lockhart et al., 2003). Thus in patients with inherited bleeding disorders, the main concern for dental practitioners is uncontrolled bleeding

during or after dental treatment (Stubbs and Lloyd, 2001). Currently, there is no universally agreed upon definition of clinically significant bleeding. There is also no consensus on the best method to quantify bleeding. Bleeding outcomes may be recorded multiple ways including the proportion of patients with bleeding, the percentage of thrombocytopenic days with bleeding, the highest bleeding grade, and the time to first bleed. The bleeding risk of a dental procedure varies with how easy it is to access the site and apply local haemostatic measures (Hewson et al., 2011). It is important to consider not only the nature and severity of the patient's bleeding risk but also the type, location and extent of the dental procedure and the expertise and experience of the treating dental practitioner (AHCDO, 2010).

Dental management of patients with Haemophilia A is based on both prevention and treatment. A successful dental regimen will reduce the need for treatment and as well as the number of emergency visits (Brewer and Correa, 2005). However, if dental treatment is required, medical work-up is also necessary and depends on the severity of the condition. For all three patients, close liaisons with the Department of Haematology as well as Anaesthetics allowed for optimal patient, medical and dental care. The patient was prescribed pre-operative Factor VIII replacement and post-operative tranexamic acid.

Considerations should also be given to the coordination of dental procedures for patients with Haemophilia A. Although all three patients were potentially cooperative to receive dental treatment in an outpatients setting, the decision was made to meet their dental treatment needs under GA in order to minimise the need and amount of factor replacement required. The development of inhibitors to therapeutic factor concentrates is of growing concern as the incidence in children with haemophilia A is increasing and approaching 33% (O'Connell et al., 2002). Immune tolerance protocols have been developed but are only successful in approximately 80% of children, but may be higher if the inhibitor titre is allowed to decline to a low level prior to commencing immune tolerance therapy (O'Connell et al., 2002). In children, if multiple appointments for restorations or extractions are required (which means factor replacement prior to each appointment), treatment under general anaesthesia is preferable as only one factor replacement is required. The restorative materials chosen should have appropriate longevity and success to avoid repeat treatment in these patients, particularly if they are receiving dental treatment under general anaesthesia. Pulp therapy in vital teeth is indicated over extractions as endodontic treatment is a low risk for these patients. However, if extraction is unavoidable, additional haemostatic agents are required including the placement of sutures if the gingival margins do not oppose well and the use of oxidised cellulose. Furthermore, if multiple extractions are required, the use of a soft vacuum formed splint may be used to protect and apply pressure to the tooth sockets (Brewer and Correa, 2005). Both haemostatic sutures and oxidised cellulose were used as local measures for the patient and managed to initially assist with haemostasis post-operatively.

Conclusion

This case report shows that paediatric dentists can have a key role in the diagnosis of bleeding disorders. The dental practitioner needs aware of medical considerations when planning and performing dental treatment for these patients. It is important for there to be good communication with the patient, the patient's parents and the haematologist to ensure optimal patient outcomes. Good oral hygiene and preventive care should also be emphasised to minimise the need for extensive dental procedures.

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Case Report: Acute and Ongoing Management of Trauma to the Permanent Dentition Sustained as a Result of a Cricket Injury

Dr Gabrielle Allen

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A fifteen and a half year old male attended the Paediatric Emergency Department at the Women's and Children's Hospital on Friday afternoon the 31 October 2014. He had a known case of dental trauma sustained at school that morning when he was struck in the face with a cricket ball. The patient was wicket keeping and wearing a helmet that lacked facial coverage at the time of the trauma. The helmet was dislodged from the blow and the patient hit their head on the ground when they fell. He lost consciousness momentarily and sustained orofacial injuries in the accident. Upon repeat assessment in the Emergency Department the initial Glasgow Coma Scale Score of 15 had decreased to 14 and the patient had become disorientated. In the absence of any further neurological signs or symptoms it was believed that the patient likely suffered a concussion and the plan was to monitor, reassess and organise a CT as indicated in 6 hours. During this period the on call dental registrar was contacted for assessment and management of dental injuries as possible.

The patient had nil significant prior medical history to report. The dental history included regular care from a General Dental Practitioner and recent completion full fixed appliances under the care of a Private Orthodontist. Extra oral examination found the patient to be confused and disorientated but cooperative with reassurance. There was moderate swelling and bruising developing involving the maxillary and mandibular lips. There were no extra oral lacerations or abrasions and the temporomandibular joints were free of symptoms.

Intra oral examination found significant soft tissue injuries as seen in ***Figure 1***. There was a 30mm laceration of the interior of the maxillary lip and surrounding soft tissues involving muscle layers. There was also a puncture wound to left of labial frenum extending within close proximity of anterior nasal spine. A degloving lesion was evident involving the attached gingiva extending from mesial of the upper right central incisor to the mesial of the upper left lateral incisor. There was also a contusion injury to attached gingiva overlaying the labial of the upper right central incisor with loss of labial plate and a 10mm laceration of mandibular lip extending to involve muscle layers. Hard tissue examination found a full permanent dentition with an anterior open bite. The bonded lingual wire extending between the maxillary canines was damaged. The upper left central incisor was reported to have been avulsed with a 5 minute extra oral dry time prior to replantation by the cricket coach. It remained grade III mobile and 1mm extruded. The upper right central incisor was extruded by 1mm, palatally displaced by 5 degrees and grade III mobile. It was reported that the upper right central incisor was potentially extruded further but also replanted by the coach. The upper right and left lateral incisors were subluxated and remained grade II mobile. Radiographic examination including and OPG and periapical images were taken to confirm diagnoses. They also demonstrated there was evidence of previous orthodontic resorption. The image can be viewed in ***Figure 2 and 3***.

Due to the associated head injury, the patient was not able to have nitrous oxide sedation or a general anaesthetic until cleared which would not be for at least 6 hours. Therefore, it was decided to treat the dental injuries under local anaesthetic continuing patient observations throughout. This approach allowed for timely re-positioning and splinting of teeth and management of the soft tissues.

Under local anaesthetic, saline and chlorhexidine preparations were used to clean and vicryl 5.0 mattess and 4.0 and 3.0 interrupted sutures were placed to repair the soft tissue injuries. The broken orthodontic retention wire was removed. The upper left central incisor was removed, the socket cleaned and debris rinsed with saline to allow appropriate reposition. The upper right central incisor was repositioned with digital pressure and a 0.014 NiTi orthodontic wire and bracket splint placed from the upper right first premolar to the upper left premolar, see ***Figure 4*** for post-operative photos. The patient was returned to the emergency department where later due to the continuation of disorientation and confusion a CT scan was organised. There was no significant intra or extra-axial pathology that could be identified. The skull bones, paranasal sinuses, orbits and mastoid air cell were all unremarkable and the base of skull intact. There was a minor soft tissue swelling overlying the right periorbital region. However, due to the continuation of neurological symptoms the patient was admitted for overnight observation prior to discharge the following afternoon once he had fully recovered from his concussion. A tetanus booster was provided and amoxicillin 500mg 8 hourly for 5 days, 0.2% chlorhexidine rinse 8 hourly for 7 days and chlorsig ointment 6 hourly for 7 days was prescribed. At the time of discharge, the patient had no recollection of the accident or the 28 hours that followed.

As per International Association of Dental Traumatology Guidelines, the upper left central incisor was extirpated and dressed with odontopaste under local anaesthetic and the splint was removed at 14 days post trauma. Two weeks post trauma the soft tissue healing had progressed well however, a periodontal defect remained evident on the mesial of the upper right permanent incisor related to the bony defect created with the injury, see ***Figure 5***. The case was discussed with a Periodontist who was happy with healing progress and recommended referral for assessment at 3 months post trauma. Discussions were also had with the treating Orthodontist who is happy to leave anterior segment unretained in an attempt to decrease the risk of ankylosis for the avulsed left central incisor and address any relapse at a later date.

Trauma reviews and root canal treatment on the upper left central incisor continued

Figure 1: Trauma presentation on 31 October 2014

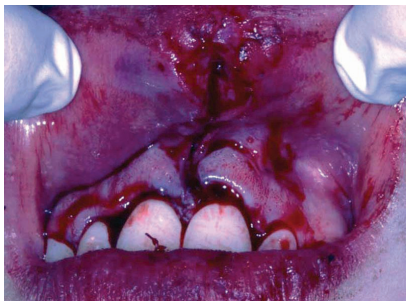
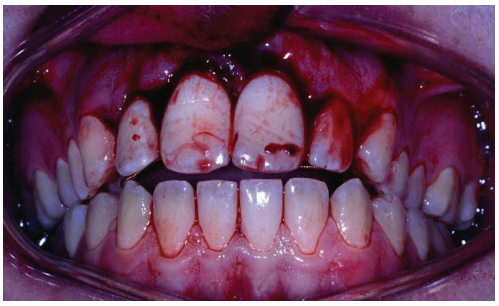



Figure 2: OPG radiographic examination 31 October 2015

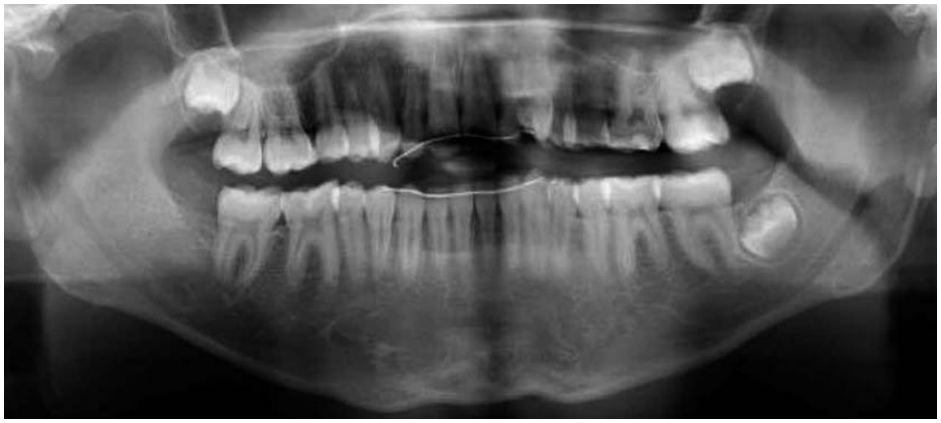


Figure 3: Intraoral radiographic examination; periapical radiographs from 31 October 2014

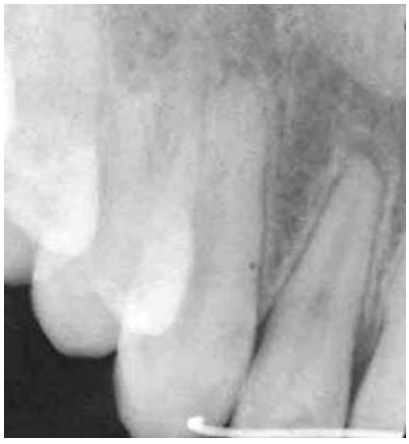
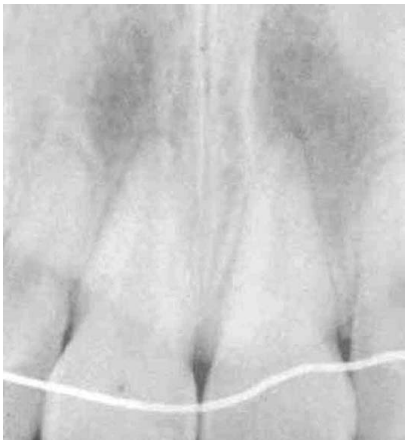
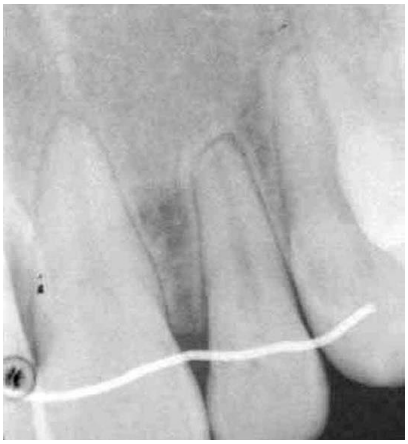




Figure 4: Intraoral presentation post treatment 31 October 2015

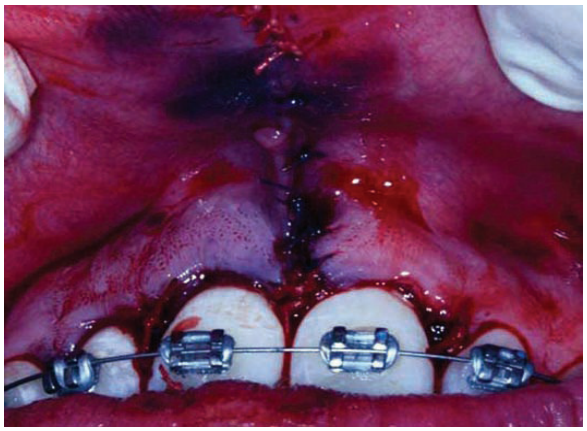
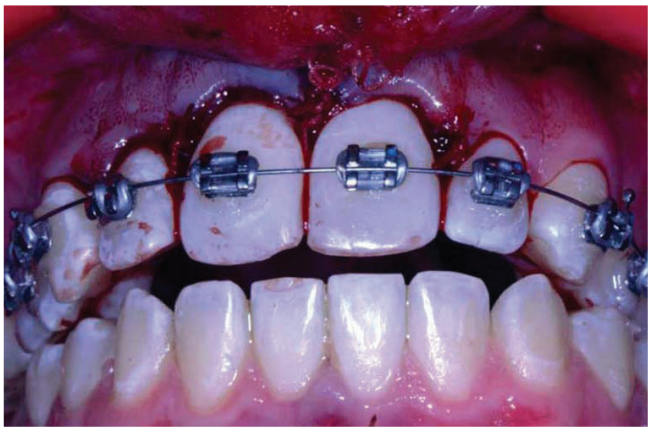



Figure 5: Clinical appearance at time of splint removal; 2 weeks post trauma and 3 months post trau a

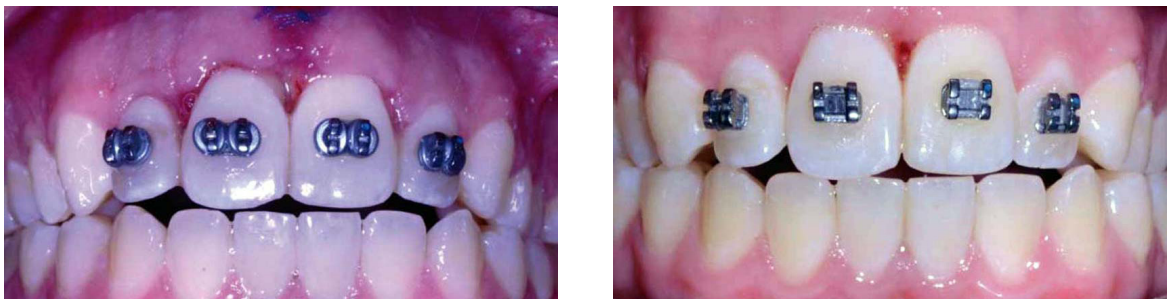


Figure 6: Periapical radiographs taken 7 months post trauma

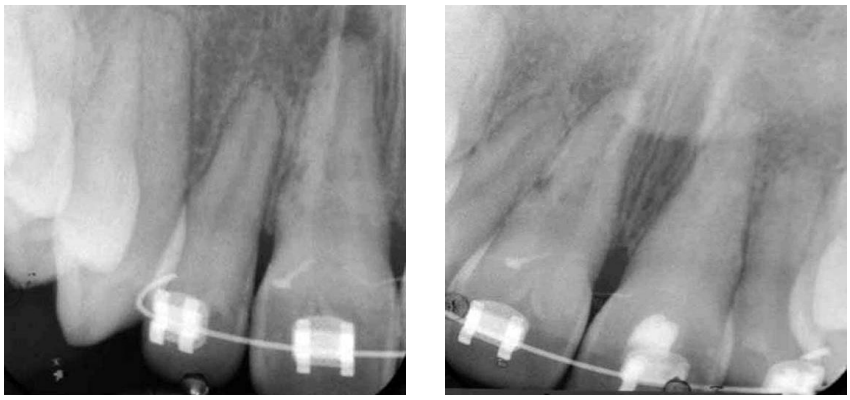


Figure 7: Periapical film taken post redress of 11 and 21; 9 months post trauma

Figure 8: Periapical films taken during obturation 12 months post trauma

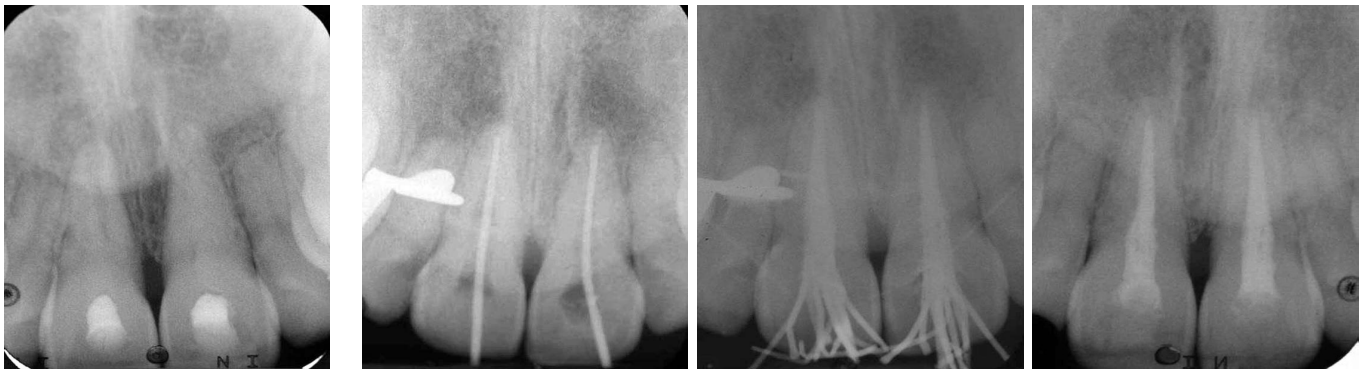
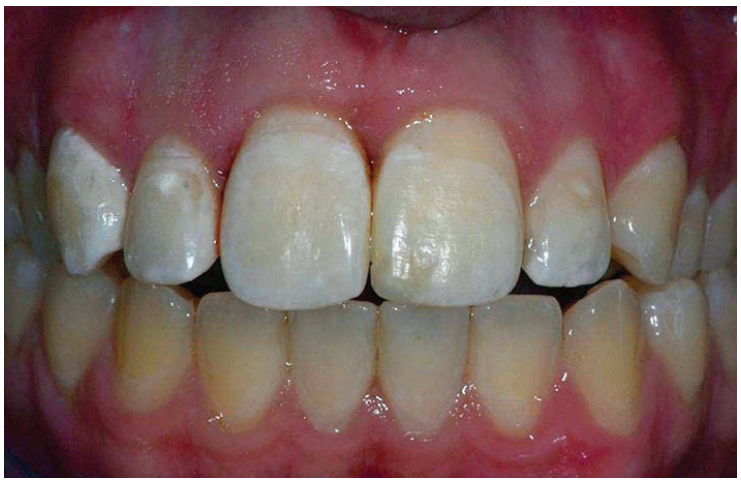


Figure 9: Intraoral appearance 12 months post trauma; 16 October 2015



Note: This was post obturation, hence the dehydration evident on the isolated 13-22

as per International Association of Dental Traumatology Guidelines. At three months post trauma the upper right central and lateral incisors and the upper left lateral incisor all remained asymptomatic and responsive to vitality testing. The gingival contour of the mesial aspect of the upper right central incisor continued to improve as seen in ***Figure 5*** above and following a consult with a Periodontist there was no treatment planned and the patient remained on long term review.

At a planned trauma review appointment (7 months post trauma) the patient had a orthodontic retention wire in place on the maxillary incisors. This was placed following some minor adjustment of the upper incisors over the approximately last 8 weeks. Unfortunately, it was noted that although the upper right central incisor was responding positively to cold vitality testing it had a periapical area and signs of external inflammatory root resorption, see ***Figure 6***. Therefore, root canal treatment was initiated on the upper right central incisor the following week and dressed initially with Odontopaste before a redress with calcium hydroxide after 8 weeks at the same time as the planned redress of the upper left central incisor. ***Figure 7*** shows the radiograph taken post redress of the central incisors, note the periodontal healing and lack of progression of the external inflammatory root resorption area on the distal of the root of the upper right central incisor

At the 12 months post trauma review both the upper right and left central incisors remained stable with periapical healing, arresting of the external inflammatory root resorption lesion and no signs of ankylosis. At this point obturation of both teeth was performed, see ***Figure 8***. The healing of the gingival defect on the mesial aspect of the upper right central incisor was noted to have continued to progress well. As seen in ***Figure 9***, clinically there is no significant residual defect and there remains to be no periodontal treatment required.

Discussion

In this case the recovery from his traumatic dental injury was complicated by the presence of external inflammatory root resorption of the upper right central incisor. This type of inflammatory resorption traditionally presents as a sequelae to traumatic injury. It involves the superimposition of infection over a traumatic dental injury (Heithersay 2007). For external inflammatory root resorption to occur there must be damage to the cementum leading to the exposure of dentine and thus potential pathway for bacteria and their toxins from the necrotic infected pulpal canal to the external root surface (Heithersay 2007; Asgary 2011). Toxins created by the bacterial in the pulpal space travel via diffusion through exposed dentine tubules where they can trigger osteoclastic activity and resorption of the root surface (Gunraj 1999; IADT 2015).Hecova and colleagues (2010) in their 5 year retrospective assessment of 889 traumatised permanent teeth found that external inflammatory resorption followed 5.6% of extrusive luxations, compared to 33.3% of intrusive luxations. Frequencies as high as 57-80% of in avulsed teeth have been reported (Hecova et al 2010). These differing rates of resorption reflect the degree of damage to the periodontal ligament in the various traumatic injuries (Hecova et al 2010).

The short extra oral dry time and prophylactic root canal treatment initiation in the upper left central incisor prevented the development of inflammatory or replacement related resorption. Although only seen in approximately 1/20 cases of extrusion, external inflammatory resorption is a complication we need to be aware of and looking for following extrusion injuries. A complicating factor of this presentation was that we were unsure of the degree of extrusion sustained however, the history and degree of mobility would suggest that the extrusion of the right central incisor was likely much more significant than the 1mm evident on presentation. Despite the degree of extrusion it is generally not recommended to initiate root canal treatment in extruded teeth until a definite diagnosis of necrosis is made because 45% of mature permanent teeth of the sample (n=23) in the International Association of Dental Traumatology Guidelines showed pulpal healing (IADT 2015).

If endodontic treatment is successful in arresting the inflammatory resorption in the permanent dentition, healing can occur via the deposition of cementum, bone and new periodontal ligament. If a large surface area is affected ankylosis may occur rather than healing with a normal periodontal ligament (IADT 2015). Fortunately in this case there has been a good outcome with no evidence of anyklosis in either central incisor. Additionally despite a 12.5% risk of necrosis (IADT 2015) at 15 months post trauma both lateral incisors that suffered a subluxation injury remain asymptomatic and positive to vitality testing. The soft tissues have healed exceptionally well with good gingival contour and the periodontal defect on the mesial aspect of right central incisor has stabilised. The patient has been discharged back to the care of his General Dental Practitioner with continued review by his Orthodontist and Periodontist as indicated.

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QLD Branch Clinic Day

Greg Ooi

The ANZSPD Qld branch Clinic Day 2015 was held in December at the picturesque grounds of the Victoria Park Golf course and function centre a couple of kilometres from Brisbane CBD.

It was a full day event by presenters Professor Kim Seow speaking on developmental defects of enamel, and Dr Geraldine Moses a well known clinical pharmacologist speaking on current topics on medications in dentistry.

Also presenting was Dr Antonjie Cakar, Prof Seow's most recent, and sadly last specialist Paediatric Dentistry graduate, presenting findings on his research project on caries prevention in a low socio economic, high dental needs area.

The day was well attended by dentists and therapists, and especially well catered for including a function dinner. As with these events, the day was as much a social gathering as an informative learning experience, and was well enjoyed by all.

SA Branch Report

Gwendolyn Huang
President, ANZSPD SA Branch

After hosting a successful ANZSPD Biennial Congress, it looks to be another exciting year for the ANZSPD SA Branch! We have four dinner meetings planned covering a range of topics. Our first meeting is a combined meeting with the Australian Prosthodontic Society SA Branch, with speakers from Paediatric Dentistry and Prosthodontics talking about "Missing permanent teeth in growing patients". Dr Gabrielle Allen and myself will be sharing our Paediatric Dentistry perspectives and Dr Gordon Burt, a pre-eminent clinician in treatment of hypodontia & oligodontia cases in Victoria will be presenting management from a Prosthodontic standpoint.

Our second meeting, in May, will take a medical approach, with a presentation from the previous Head of Paediatric Rehabilitation and current Consultant at the Women's and Children's Hospital, Professor Ray Russo. We will hear about Paediatric Rehabiliation Medicine and the implications for some of our special needs patients. Third year postgraduate student, Dr Lloyd Hurrell will also be presenting one of his cases.

In August, Dr Ninna Yuson and Dr Steve Langford will be sharing their opinions on "Interceptive Orthodontics: a Paediatric Dentist's and Orthodontist's Perspective", with a second year postgraduate case presentation by Dr Alice Howarth. For our final meeting of the year, Emeritus Professor Alastair Goss will be discussing "Litigation and Expert Witness cases related to Paediatric Dentistry". Additionally, first year postgraduate student, Dr Marko Milosevic, will be also be giving a case presentation.

Plans are also well under way for a half-day seminar program planned for Saturday 4 June. Members will be able to listen to Associate Professor Sam Gue and Professor Richard Widmer share their combined 50 years of Paediatric Dentistry experiences. The program will be held at the Adelaide Zoo, home of Australia's only pandas! Members will be able to visit the Adelaide Zoo in the afternoon, with complimentary zoo admission.

I look forward to another successful year for the ANZSPD SA Branch!

NSW Branch Report

Prashanth Kumar Dhanpal
Secretary ANZSPD

ANZSPD NSW Branch has enjoyed another fruitful year of continuing education and professional development.

All the existing members of ANZSPD have been contacted to renew their subs for the year 2016 and the response was overwhelming. The venue for ANZSPD lecture meetings for 2016 is changed and will now be held at The Mantra, 10 Brown Street, Chatswood NSW 2067.

The lecture meetings for Year 2015 have been a great success and We have continued to broaden our horizons through our dinner meetings. At our first meeting, we learnt from Dr Mala Desai who lectured on the use of "Zirconia crowns for children" as an alternative to stainless steel crowns. The technique-sensitive steps involved in placing a zirconia crown was discussed in detail and It was interesting to hear how the zirconia crowns changed the quality of life in children and parents alike.

Dr. Eduardo Alcaino's second meeting of the year entitled "Are you happy with your happy gas? What's new and clinical tips" spoke in depths about various aspects of relative analgesia and specifically focussed on technique and case selection to provide the very best for the child patient.

The third and the last dinner lecture for year 2015 was delivered by DR. Anthonappa Robert Prashanth discussing the evidence, pros and cons of various pulp therapy medicaments and the decay in pulp therapy studies.

The lecture meetings for Year 2016 have been finalised and will be held on:

1st meeting: 18/04/2016 "Diagnostic imaging in Paediatric Dentistry: An update" by Dr. Bernard Koong, a maxilla-facial radiologist from Perth, Western Australia who has a special interest in interceptive radiology and the application of latest low dose diagnostic imaging technology.

2nd meeting: 12/07/2016 by Dr. Peter Wong, a Paediatric Dentist from Canberra.

3rd meeting: 18/102016 by Dr. Tim Johnston, a Paediatric Dentist from Perth and who is also the current federal president for ANZSPD.

Under the leadership of Dr Michelle Tjeuw, we look forward to a wonderful and productive 2016. Dr Naveen Loganathan has worked tirelessly in settling the accounts and Dr Soni Stephen has kept us up to date with the Federal issues. Together, we have worked seamlessly to organise the meetings and encourage membership into the NSW Branch.

Up Coming *Events*

26-28 May 2016
Paediatric Dentistry Association of Asia 10th Biennial Conference
Tokyo Dome Hotel
Tokyo, Japan
www.pdaa2016.asia

2-5 June 2016
13th Congress of the European Academy of Paediatric Dentistry
Sava Centar
Belgrade, Serbia
www.eapd2016-serbia.com

11-13 August 2016
19th World Congress on Dental Traumatology
Brisbane Convention and Exhibition Centre
Brisbane, Australia
www.wcdt2016.com

26-29 October 2016
NZDA Conference 2016
TSB Arena
Wellington, New Zealand
www.nzda2016.org.nz

8-11 February 2017
13th International Congress of Cleft Lip and Palate and Related Craniofacial Anomalies
Radisson Blu Resort
Chennai, Tamil Nadu, India.

17-21 May 2017
ADA 37th Australian Dental Congress
Melbourne, Australia
www.facebook.com/adacongress
cleft2017.org

4-7 October 2017
IAPD 26th Congress
Santiago, Chile
www.iapd2017.com

Australia and New Zealand Society of Paediatric Dentistry
www.anzspd.org.au

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